

NEST SITE CHARACTERISTICS OF THE SOCIAL WASP, *PARAVESPULA VULGARIS*(L.) (HYMENOPTERA: VESPIDAE) DO NOT INFLUENCE MATURE COLONY SIZE

MICHAEL E. ARCHER

College of Ripon and York St John, York, YO3 7EX.

Spradbery (1971) suggested that variation in nest site characteristics of British social wasps could affect the growth rates and eventual mature size of a colony. Matsuura (1984) recorded that queens and workers of nests of *Vespa crabro* L. and *V. simillima* Smith, F., where there was not sufficient room for the enlargement and successful development of colonies, often relocated themselves and started a secondary nest in a new location where there was more room. In this paper is reported an attempt to correlate mature nest size with nest site characteristics for *Paravespula vulgaris* (L.).

METHODS

Data were collected from 1969 until 1972 from 42 nest sites of *P. vulgaris* from a rural site called Sand Hutton in Yorkshire (SE 6958). The soil throughout this study area was of a similar sandy texture without obstacles so enlargement of the nest cavity by worker wasps was not prevented. The water table was well below the nest cavity level and flooding of nest cavities after heavy rain was not observed. Archer (1981) gave a further description of the Sand Hutton locality. From each nest site the following data were collected: (1) depth of the nest below the ground as measured from the top of the nest, (2) presence or absence of shading by vegetation and (3) whether the aspect was mainly a northerly or southerly one. In addition at the end of the season when all wasp activity had ceased the nests were dug up and the number of cells in each nest counted.

RESULTS AND DISCUSSION

There was no correlation between the number of cells in the mature nests and the depths of the nests in the soil ($r = 0.21$, n.s., $n = 42$). The degree of shading and aspects of the nest sites also showed no relationship with the number of cells in the mature nests. In fact deep nests (10–30 cm depth) which were shaded and faced north had a similar mean number of cells (7594 cells, $n = 12$) as shallow nests (2–9 cm) which were not shaded and faced south (7569 cells, $n = 12$).

This lack of correlation between mature nest size and the nest site characteristics of degree of shading, aspect and depth of nest indicates that the development of the colony proceeds largely independently of the surrounding weather. This is perhaps not too surprising because a colony maintains a remarkably constant temperature just below 30°C, independent of background temperature, when a worker population is present in a colony (Edwards, 1980). Of course variation in nest site characteristics could still influence failure or success of the queen and early worker nests but no data are available to investigate this part of the problem.

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